



Decade of the Brain An Agenda for the Nineties

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On July 25, 1989, President George Bush, in response to reports written by the National Advisory Councils of the National Institute of Neurological Disorders and Stroke and the National Institute of Mental Health and at the urging of Congress, signed a presidential declaration designating the 1990s to be the "Decade of the Brain" and called on the United States to observe the decade with appropriate activities. At mid-decade, scientific accomplishment has been spectacular; however, both public support and increases in research resources have been minimal. It can be anticipated that scientific progress will continue to be impressive for the remainder of the decade, but many research opportunities will either not be addressed or will be postponed. At mid-decade, the time has come to re-evaluate the research agenda and the public strategy for the remainder of the decade.

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In the closing years of the 1980s, a small group of scientists, science administrators, and political observers met to discuss how the remarkable advances and the opportunities for further progress in the basic and clinical neurologic sciences could be brought to the attention of the public and its elected representatives. It was agreed the time was opportune to initiate an identified national research endeavor that would describe attainable neuroscientific objectives pertinent to health issues. The opportunities available for addressing these research objectives would be documented, and the additional resources necessary to meet these goals would be described. The effort needed an identity, a focal point for program implementation, and champions both within and outside of government. Questions addressed were, Should the effort follow the format of an open-ended endeavor such as the War Against Cancer, or a time-limited megaproject such as the Genome Project, or something else? Who could be the champions within government? Should the effort be supported outside of government by a structured coalition of professional, scientific, and lay organizations, or should each organization be urged to mobilize its own forces to support the endeavor?

The result of these discussions gave birth in 1988 to the concept that the 1990s be designated the "Decade of

the Brain"—a national research endeavor to better understand how the brain (and nervous system) is organized, how it functions, why it fails to function, and what can be done to prevent and treat dysfunction. The proposal would have measurable objectives, describe the need for additional resources, designate a time frame long enough to permit accomplishment, and use language that was understandable and appealing.

In designating program responsibility, the two organizations that already had major responsibility for brain research were proposed to be the focal points for planning and implementation: the National Institute of Neurological Disorders and Stroke (NINDS) and the National Institute of Mental Health (NIMH). Allies needed to be identified who would champion the program both in the administration (the Office of the President or the Office of the Secretary of the Department of Health and Human Services) and in Congress. These leaders would need the support and assistance of nongovernmental organizations that could collaborate as a national coalition.

The stage was set, the objectives defined, the roles enumerated, and the clock started ticking.

The Next Step

In July 1988, the National Advisory Councils of the

ABBREVIATIONS USED IN TEXT

NIH = National Institutes of Health
 NIMH = National Institute of Mental Health
 NINDS = National Institute of Neurological
 Disorders and Stroke

NINDS and the NIMH organized working groups of scientists to specify research targets, research opportunities, and the resources required to meet these targets in their respective areas of research responsibility. Several attempts to have a joint NINDS-NIMH effort and a single national plan failed. The reasons for failure are complex and disappointing; however, the leadership of both institutes agreed that their organizations would develop plans and would share information on a continuing basis. Both groups developed and published their plans.^{1,2}

A champion in the administration to spearhead these initiatives was never recruited. Health and science leaders in the administration were cautious because of the increasing fiscal deficit and the desire to maintain an adequate across-the-board research endeavor at the National Institutes of Health (NIH). They feared that in a period of a level budget for the NIH, specified increases in one area would be at the cost of other health research areas, as was already being threatened by grassroots activism for additional research funds for the acquired immunodeficiency syndrome and Alzheimer's disease. Thus, administration executives did not say no to a Decade of the Brain; they remained silent.

The Republican leader on the House Appropriations Subcommittee responsible for the NIH budget, Representative Silvio Conte (Republican, Massachusetts), took the initiative to be the congressional champion for the Decade of the Brain. In a "Dear Colleague" letter, he asked that the House of Representatives join him in requesting that the 1990s be designated by the President as the Decade of the Brain; Senator Donald W. Riegle (Democrat, Michigan) did the same in the Senate. Because of their efforts and the resulting House Joint Resolution 174, on July 25, 1989, President Bush signed a presidential declaration calling on the United States to observe the Decade of the Brain with appropriate activities.

Professional, scientific, and lay organization leaders hailed this presidential declaration and urged their constituencies to write their representatives in Congress for the additional resources necessary to implement the program. Despite the declaration, the President's budget for the next fiscal year (1990) did not propose increased funding to implement an accelerated research program. At the congressional level, a modest increase was provided for both the NINDS and NIMH. The Decade of the Brain was born—but with a whimper rather than a lusty cry.

Another Step

On the advice of friends in high places, the NINDS Advisory Council decided that a definitive action plan was needed to meet more specific research targets. With the help of the scientific community and following public

hearings on needs and priorities, a follow-up report was developed and published.³ The NINDS Implementation Plan was arranged in sections addressing research opportunities for advances in critical neurologic health areas: the developing brain (developmental disorders); the injured brain (head and spinal cord trauma); the failing brain (multiple sclerosis); and the feeling brain (pain). A special section on training was also included. The plan was distributed to the Executive Office and Congress in June 1990 as final discussions were being held for the 1991 budget. It was also made available to nongovernmental organizations and widely distributed by them to their constituencies. There were discussions among scientific and health organization leaders about a coordinated national grassroots effort to influence Congress, but it did not materialize; instead, a handful of letters in support of a substantial increase in funds for neuroscientific research was sent to Congress by the leadership of several professional and public organizations.

The NINDS Implementation Plan was accepted by the Bush Administration and congressional leaders and was praised as a "blueprint" and as a planning "model." The appropriation in the 1991 budget for both the NINDS and NIMH again provided only a modest increase in support of the second year of the decade, however. The Decade of the Brain moved forward, but as part of the normal order of things rather than with gusto. The following reasons were given: fiscal constraint (was this a reason or an excuse?), insufficient scientific community support (was this a problem of mixed loyalties and divided support?), lack of grassroots community activism (or was this a concern with individual diseases and preoccupation with health care services?), and poor leadership (or were there too many leaders?).

The Issues

Meanwhile, despite financial limitations, research did progress. Cell and molecular biology were now the everyday language of neurologic research. The identification of the genetic loci for neurologic function and neurologic dysfunction was ahead of other areas of genetic research. Morphologic and dynamic brain imaging was providing technologies that made the *in vivo* study of the human brain a reality. The methods of controlled clinical trials were being used to re-evaluate the efficacy of established clinical therapies and to test the applicability of new clinical interventions.

Midpoint

At its midpoint, the Decade of the Brain is an overwhelming scientific success. Basic and clinical neurologic science is identified as an important component of the national research agenda. In government, about \$1.5 billion is dedicated to research on the nervous system, principally through the programs of the NIH. A modest growth in neuroscientific support continues, but with increasing competition for available resources. Neuroscience continues to be an exploration, providing better insight into the what and the how of the nervous system

in order to address the future; unlike a war, it is not offering quick fixes to problems of the present. The intellectual and the clinical results have already had a profound effect on the promotion of health and the treatment of disease.

Neurologic research is a scientific success story. Four decades of generous support and encouragement have resulted in accomplishments that could hardly be imagined. Then why are we neuroscientists so gloomy? Our problem is that we are frustrated. We recognize that with a meaningful increase in resources, the opportunity for accelerated achievement is possible. This is true in both the basic and the clinical neurologic sciences. As a public force, the neuroscientific community has not been able to share this recognition of opportunity with the President or Congress. This is the frustration—a failure not in scientific accomplishment, but rather in influencing the public and its leaders. The opportunities for important research continue to increase, the training pipeline is providing additional highly skilled basic and clinical scientists, and funding levels are stable. The result is that competition for research funding will become even more intense.

What Next?

How do we approach the second half of the Decade of the Brain? There are three options for the neuroscientific community to consider:

- Remobilize and attempt to obtain support for the additional resources necessary to accelerate a broad-based research program;
- Work to maintain the resources now available so that other research areas targeted to emotional issues do not grow at the expense of neuroscience research; and
- Document the imperative of addressing research on specific neurologic diseases with earmarked additional resources.

The first option is the ideal, but it requires grassroots support or faces the danger of receiving yawning attention. The second option would maintain the status quo

and has a reasonable probability of success because of continuing achievements. The third may be successful but only if grassroots support is aggressive; however, it means an increase in targeted, directed research—perhaps at the cost of investigator-initiated research.

An additional issue is organizational. Could more be done by using available resources more effectively? Does the current administrative structure of the NIH provide the best base for implementing a neuroscience research agenda, two major neuroscientific institutions, and three to five others? Are the collaboration and cooperation of the various agencies of the federal government effective, and are they taking advantage collectively of neuroscience research opportunities? Has the time come to reconsider the present loose administrative structure for the support of neuroscientific research and centralize responsibility as is done in the cancer and heart research areas?

How do we maintain the present successful scientific effort and also take advantage of exciting new opportunities? How do we use available resources wisely? How do we get the vigorous support of the public and its representatives? These were the questions asked in the late 1980s when the Decade of the Brain was conceived as a national research initiative. They need to be asked and answered again at the midpoint of the decade.

We have not hit all the bull's-eyes. But a sage has shared this wisdom with me—if you hit all the bull's-eyes, the target was too close.

REFERENCES

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